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Lisa Brown Jasa
University of Nebraska-Lincoln, ljasa@unlnotes.unl.edu

CROP WATCH

University of Nebraska Cooperative Extension
Institute of Agriculture and Natural Resources

No. 94-4
April 15, 1994

Further tests needed before chloride recommended for wheat

Recent South Dakota research on the effects of chloride on spring wheat has generated interest in its use in Nebraska for winter wheat. South Dakota researchers have suggested the following ranges for chloride, a plant-essential nutrient:

Low:	less than 31 lb Cl/A
Medium:	31-60 lb Cl/A
High:	more than 61 lb Cl/A in 2 feet.

Nebraska research indicates that the South Dakota numbers are not necessarily a good guide for Nebraska soils and its crop production situation. A survey of 114 fields in southwest Nebraska indicated that a large percentage would be deficient in chloride if the South Dakota levels were used.

Research was initiated in 1992 in western Nebraska in conjunction with the winter wheat variety trials. In the Panhandle 28 to 36 wheat varieties were grown with and without 80 lb Cl/A. The chloride source was common potash fertilizer (0-0-60) which is potassium chloride. All soils in these studies had very high soil test levels of potassium. The South Dakota data has shown that their responses to potassium chloride were a result of the chloride and not the potassium. Most of their soils also tested high in potassium.

In west central Nebraska four rates of chloride were used on two varieties grown at five locations. The two varieties were selected based on their susceptibility to leaf rust: Redland (somewhat resistant) and TAM107 (susceptible).

Results from the Panhandle studies showed no significant differences in yield due to chloride even though soil chloride levels were 'low' by South Dakota guidelines.

County	*yield* w/o Cl*	*yield w/Cl*	*soil test lb/A-2ft*
Dawes	67.2	69.9	15
Kimball	50.9	51.3	16
S. Bluff	31.9	28.6	25
Morrill	30.0	27.6	12
HPA	30.7	30.8	17

**There was no significant difference between the treatments at any site.*

There was hail damage at the Morrill, Scotts Bluff and High Plains Ag Lab sites. No data were collected on disease infestation but general observations showed little disease pressure at any location.

Results from west central Nebraska showed that increasing chloride rates significantly decreased leaf rust, however there were no significant yield responses

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With conservation tillage:

Soybean seed treatment recommended

Nebraska soybean growers generally have not relied on fungicide seed treatments to protect the seed/seedling from seed- and soil-borne pathogens. Production practices that minimize seed/seedling problems include use of high quality seed, delaying planting until soil temperatures are in the mid to upper 60s, planting at the proper depth in a well prepared seed bed, and annual rotation with other crops such as corn or sorghum. While these practices are still encouraged, the increasing adoption of various conservation tillage systems has significantly affected our recommendations regarding fungicide seed treatments on soybeans.

Several factors associated with the soil environment are inherent with ridge-till and other conservation tillage systems and affect seed germination and seedling establishment:

1. Cooler soil. Because no-till or ridge-till fields tend to have more surface residue, soils warm up more slowly. If no-till growers attempt to plant as early as their conventional-till neighbors, germination may be delayed and seedling vigor may decrease.

2. Wetter soil. Increased surface residue tends to contribute to higher soil moisture. While this may benefit plant growth during periods of

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Soybean seed

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moisture stress, it usually hurts seedling emergence.

3. Poor seed/soil contact. Reduced tillage systems may contribute to poorer seed-to-soil contact and improper seed placement due to the increase in partially decayed plant residue.

4. Weed infestations. Some seed and root pathogens are parasitic on specific weed hosts, if weeds are not controlled under conservation tillage systems. These weed hosts can provide for higher survival rates and more rapid buildup of pathogens which can cause early season soybean diseases.

Our position on fungicide seed treatment for soybeans has been "fine-tuned" due to the increased interest in and adoption of conservation tillage in Nebraska. Our recommendation is: Soybean producers attempting to maximize economic returns by (1) planting early, (2) planting in narrow rows, or (3) employing reduced tillage practices should use high quality seed that has been treated with a fungicide.

David S. Wysong
Extension Plant Pathologist

Kansas disease report

Wheat streak mosaic was at higher levels than anticipated in north central Kansas. Some fields had incidences of 10 to 50 percent. Reports were also made in central and northwest regions.

Speckled leaf blotch was the predominate foliar wheat disease. It was found at moderate levels in north central Kansas and in a few cases, fields were turning yellow from infection. Leaf rust has been found in northwest Kansas and likely overwintered in the area.

Jon Appel, Plant Pathologist, Kansas Department of Agriculture.
(April 8 Report)

Field record book helps producers meet federal criteria

Extension Publication EC 93-2540: *Field Records for Restricted Use Pesticide Applications and Integrated Crop Management by Private Applicators.*

This pocket-sized book is designed to help producers record the restricted use pesticide application information required by the 1990 Farm Bill. It provides for recording pesticide application information for 10 fields, as well as information on soil types, organic matter, seeding rate, field operations, yield data, fertilizer applications, irrigation records, and producer notes.

RUP application records must be maintained for two years from the date of application. Beginning in 1995 the records must be kept for three years in Nebraska. Cooperative Extension is providing each producer with one booklet this first year as long as the supply lasts. Extra booklets are available for $1 at local extension offices.

Larry Schulze
UNL Pesticide Coordinator

CROP WATCH

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Lisa Brown Jasa, Editor

For more information about a particular subject, write the authors at the addresses below:

UNL Department of Entomology
202 Plant Industry Bldg.
Lincoln, NE 68583-0816

UNL Department of Plant Pathology
406 Plant Science Bldg.
Lincoln, NE 68583-0722

UNL Department of Agronomy
279 Plant Science Bldg.
Lincoln, NE 68583-0915

UNL Department of Agricultural Meteorology
236 L.W. Chase Hall
Lincoln, NE 68583-0728

Effects of tillage on pests subtle

Various decisions related to crop production (planting date, variety selection, crop rotations, cultivation, harvest dates) may influence the severity of problems with insect pests. Previous articles discussed the effects of planting dates, variety maturity, harvest dates and crop rotations. This article addresses the effects of tillage practices on major crop insect pests in Nebraska.

Tillage was often recommended as a cultural insect control practice in the pre-DDT era, particularly for soil insect pests. Tillage can physically crush soil insects such as wireworms or white grubs, although often only a small portion of the total population is in the plow layer at a particular time. Spring or fall tillage, which is most practical, may miss many soil insects which move below the plow layer to overwinter.

Usually the effects of tillage are more subtle. Tillage may modify the soil temperature and moisture, influencing insect behavior and crop growth. Reduced tillage systems may have higher soil moisture and be slower to warm up in the spring, thus reducing crop growth. This may increase damage from wireworms, white grubs and other seed and seedling pests, which have an increased period of time to feed on young plants under these conditions. As the soil temperature warms up, and the soil moisture decreases in the summer these insects may move deeper in the soil and feed on less vulnerable plant parts.

Crop residues or weeds or their absence also may influence insects such as black cutworm in corn and greenbug in sorghum. Black cutworm moths lay their eggs in the spring and prefer sites with crop residue or green vegetation. These conditions may be increased with conservation tillage practices. However, in the case of greenbugs in sorghum and wheat, surface residue reduces a field's attractiveness to flying greenbugs as they colonize fields. Greenbugs are more likely to colonize fields under conventional tillage systems with more bare ground visible.

The three tables on pages 26-27 summarize the likely effects of reduced tillage systems on com-

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Chloride for winter wheat *(continued from page 23)*

at three sites. The Dundy and Perkins county sites were lost to hail.

A summary of chloride research presented at the Great Plains Soil Fertility Conference in March showed that the response to chloride in spring wheat is dependent on soil test and variety. Some varieties are more susceptible to leaf diseases than others and often show yield increases to chloride when it suppresses leaf diseases. Research in Kansas has shown limited chloride response in western Kansas. In eastern Kansas a response to chloride on lower testing soils is shown about 60% of the time. Chloride levels are generally lower in eastern Kansas due to higher rainfall.

These studies are not conclusive and research is continuing in 1994 with plots in western Nebraska. The chloride soil test does not seem to be a good indicator for response in Nebraska, especially for winter wheat More field research will be required to provide more accurate predictions. The data do indicate the importance of 'local' research in establishing nutrient recommendations.

		Custer Co.		Keith Co.		Red Willow Co.	
Wheat Variety	*Cl rate Rate*	*Yield*	*Rust*	*Yield*	*Rust*	*Yield*	*Rust*
	lb/A	bu/A	%	bu/A	%	bu/A	%
	0	62C*	34A	75A	9A	54A	71A
	15	63bc	34a	73a	9a	54a	72a
TAM107	30	68a	32a	73a	5b	57a	64ab
	45	66ab	27b	73a	6b	55a	57b
	0	68ab	13a	72a	2a	63a	45a
	15	64bc	11ab	72a	1a	59a	43ab
Redland	30	69a	10ab	66b	1a	61a	42ab
	45	63c	7b	72a	1a	61a	38b

*Values followed by the same letter are not significantly different (P<0.10) for that site.

Gary W. Hergert, Soils Specialist
West Central Research and Extension Center, North Platte

Tillage and pests

(Continued from page 25)

mon insect pests of corn, soybeans and wheat in the Midwest. Despite early concerns, reduced tillage systems have not vastly increased insect pest problems in Nebraska crops. However, some pests, particularly early season pests such as wireworms, white grubs, and black cutworms, warrant careful early season scouting of fields to monitor for pest occurrence.

Greater use of cultural practices in pest management requires planning since these practices act to prevent pest buildup. As preventive practices they are implemented before the pest level is known, or damage is observed. However, recently much thinking about insect pest management has focused on crop pest management practices which are implemented after economic levels of pest damage have occurred. More attention should be given to long-term planning to take advantage of the benefits from using cultural practices for pest management.

Bob Wright,
Extension Entomologist,
South Central Research and Extension Center, Clay Center

Note: The source for the three tables on pages 26-27 is Steffey, K., M. Gray & R. Weinzierl. 1992. Insect management, pp. 67-74, in Conservation Tillage Systems and Management, MidWest Plan Service Publication MWPS-45, Ames IA.

Possible effects of conservation tillage systems on pests in corn.[a]

Insect	Effect[b]
Armyworm	0 to +++
Ryegrass and other grass cover crops and hay crops are especially attractive to egg-laying armyworm moths. In no-till systems where the grass cover is not plowed under, larvae move from the grass to feed on corn.	
Black cutworm	+ to +++
Adult black cutworm moths prefer to lay eggs in weedy fields and in fields with unincorporated crop residues. Increased populations of predators and parasitoids also develop, but an increase in black cutworm injury often occurs anyway.	
Corn earworm	0 to +
If planting date or crop development is delayed in no-till fields, corn is usually more attractive to egg-laying moths. This is usually a minor concern except for seedcorn producers.	
Corn rootworms	0
Adults lay eggs in late summer; subsequent tillage has little effect on the survival of eggs during most winters. In harsh winters with subnormal temperatures and subnormal snowfall, egg survival is somewhat greater with reduced tillage.	
European corn borer	0 to +
Conservation tillage favors greater survival of corn borers in crop residue, but effects in specific fields are minor because moths disperse from emergence sites to lay eggs in suitable fields throughout the local area. Where reduced tillage leads to delayed planting or slower germination (cooler soil temperatures), corn may be less susceptible to attack by first generation corn borers and more susceptible to second generation injury.	
Slugs	+++
Unincorporated crop residues and cooler, wetter conditions favor increases in slug populations and injury.	
Stalk borer	0 to +++
Overwintering survival is greatest in conservation tillage systems. In no-till fields, serious injury is most likely where grasses were present to attract egg-laying moths the previous August and September. If corn is no-tilled into soybean stubble where weeds were controlled during the previous year, stalk borers are not a problem.	
Western bean cutworm	0 to +
Conservation tillage favors greater regional survival of western bean cutworms. Effects in specific fields are minor because moths disperse from emergence sites to lay eggs in suitable fields throughout the local area.White grubs0 to +Increases in grassy weed populations and reduced disturbance of soil favor survival of true white grubs.	
Wireworms	0 to +
Increases in grassy weed populations, reduced soil disturbance, and delayed germination caused by cooler soil temperatures may favor wireworm build-up and injury.	

[a]The range of effects notes the possibilities and worst case scenarios. Individual field experience may not confirm these extremes. Weather is directly tied to potential pest problems in to-till.

[b]+++ = Substantial increase in pest population.

+ = Some increase.

0 = No effect.

- = Some decrease in pest population.

Possible effects of conservation tillage systems on insect pests in wheat.[a]

Insect	Effect[b]

Army cutworm - to 0

Army cutworm prefers barren or freshly worked soil for oviposition, so surface residues might deter egg laying activities. Oviposition occurs in the fall after planting, so tillage effects would be within-field rather than regional.

Greenbug - to 0

Fall and early spring infestations are deterred by the presence of surface residues and favored by the presence of volunteer small grains.

Hessian fly 0 to +++

Hessian fly populations carry over where wheat stubble is not tilled and volunteer wheat is not controlled. Hessian flies from undisturbed stubble move to new wheat that is planted before fly-free dates. Hessian flies that infest volunteer wheat in the late summer and early fall overwinter in the volunteer plants and can move to additional fields in the spring (regardless of those fields' fall planting dates). No-till seeding of wheat into other crop residues poses no problem.

Pale western cutworm - to 0

Similar to army cutworm in that it cannot lay eggs on crusted soil, so other tillage relationships may also be similar. Also oviposit in the fall so tillage effects would be within-field for winter wheat.

Russian wheat aphid 0 to +

Favored by presence of volunteer small grains. Adjusting planting dates is a more important cultural practice than modification of tillage. Tillage effects do not seem similar to those observed with greenbug, although moisture conservation from stubble mulch systems may reduce Russian wheat aphid effects substantially.

Wheat curl mite 0 to +

Similar to Russian wheat aphid in that volunteer wheat management and adjustment of planting date are key cultural practices.

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[a]The range of effects notes the possibilities and worst case scenarios. Individual field experience may not confirm these extremes. Weather is directly tied to potential pest problems in no-till.

[b]+++ = Substantial increase in pest population.
+ = Some increase.
0 = No effect.
- = Some decrease in pest population.

Possible effects of conservation tillage systems on insect pests in soybeans.[a]

Insect	Effect[b]

Bean leaf beetle 0 to +

Tillage has little effect on foliar feeding by bean leaf beetles, unless planting dates are earlier

Grasshoppers 0 to +

Reducing tillage favors the survival of only those grasshopper species that lay eggs within fields. Those that lay eggs in weedy margins are not affected.

Seedcorn maggots

Seedcorn maggot populations are greatest in systems in which a live, green cover crop is incorporated into the soil.

Slugs +++

Unincorporated crop residues and cooler, wetter conditions favor increases in slug populations and injury.

Spider mites - to 0

Where crop residues help to retard soil moisture loss, plants may be less drought-stressed than in plowed fields; reducing drought stress slows spider mite outbreaks.

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[a]The range of effects notes the possibilities and worst case scenarios. Individual field experience may not confirm these extremes. Weather is directly tied to potential pest problems in no-till.

[b]+++ = Substantial increase in pest population.
+ = Some increase.
0 = No effect.
- = Some decrease in pest population.

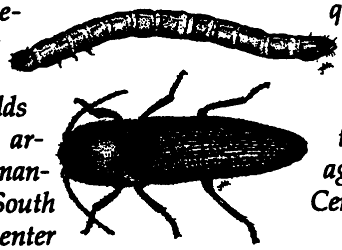
Correction

In the April 1, 1994 issue of CropWatch in the story "Control broadleaf weeds in wheat now", the second-from-the-last sentence at the bottom of the second column should read: "If combined with 2,4-D, do not apply after the joint stage."

Lisa Jasa
CropWatch Editor

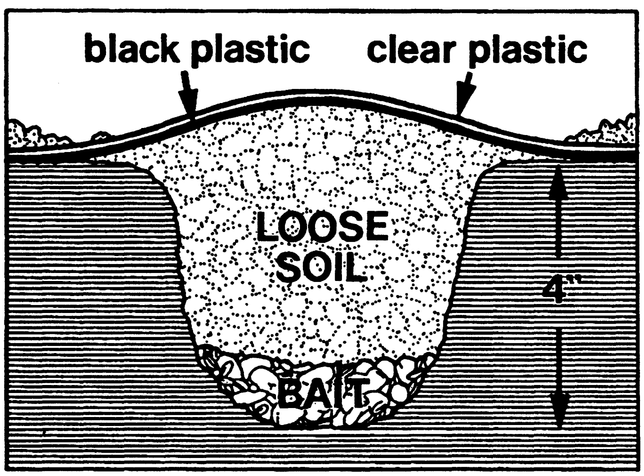
Use bait stations for wireworms

Wireworms are occasional pests of corn and grain sorghum. There is an increased potential for wireworm damage in fields which were damaged by 1993 windstorms and subsequently had heavy grassy weed populations. Adult wireworms are attracted to grassy areas to lay their eggs. Particularly monitor these fields with a bait station before planting. The following article is a good summary of wireworm biology and management. Bob Wright, Extension Entomologist, South Central Research and Extension Center, Clay Center



Wireworms are the most common soil insect pests when corn has been planted into old pasture, small grain, or sod. They are rarely seen in row crop rotations. There are several species of wireworms, and they may have life cycles lasting more than one year. Therefore, fields damaged last year may be facing damage again. However, because of the sporadic nature of wireworm infestation, the odds are it will not be an economic problem. How can you reduce the uncertainty of infestation? Bait stations can be used to assess wireworm levels before planting. The bait consists of germinating corn and wheat seeds.

Bait stations should be set up two to four weeks before the planned planting date (any time now). They should be placed randomly throughout the field. Ten stations are suggested as a minimum number per field. Be sure to place stations in different parts of a field (i.e. different soil types, rotational crops, etc.) to obtain a representative sample.



To construct a bait station, dig a hole and bury about 4 inches deep a 1/2 cup mixture of untreated corn and wheat. Cover the bait with loosely packed soil, and cover the soil with 18 inch square pieces of black and transparent plastic anchored on the edges with soil. The plastic helps heat the soil quickly and speeds seed germination. Substances produced by the seedlings attract the wireworms to the bait. Mark each station with a flag or stake. In 10 to 14 days, dig up the stations and count the number of wireworms.

If you find an average of one or more wireworms per bait station, use an infurrow application of a labelled soil insecticide. If wireworms are present at low levels (less than one per station), planter box treatment alone should prevent serious damage.

See EC 94-1509, *Nebraska Insect Management Guide for Corn and Sorghum*, for a list of labelled insecticides, rates and restrictions.

Keith Jarvi, Extension Assistant-IPM, Northeast Research and Extension Center, Concord, in the *Northeast IPM Newsletter*

Kansas: Cool temps check pests

Though the cooler weather usually favors aphids over beneficials, greenbug numbers were much lower in wheat fields rechecked at two sites in Cowley County on April 4. Adult parasitic wasps were much more numerous at those sites and were said to be abundant in a greenbug infested wheat field further north in Sedgwick County on March 30.

A break in the weevil hatch, stabilizing the population, was noted in an alfalfa field rechecked recently in Montgomery County. This was likely related to the recent cooler weather. The cooler weather likely checked or slowed the hatch in other alfalfa fields as well. However, the weevil hatch is likely to pick up quickly as warmer weather returns. Alfalfa growers should continue to check their fields regularly, especially during warmer weather. Limited surveys continue to turn up significant populations of aphids in scattered alfalfa fields. If population builds are not sufficiently checked by unfavorable weather and beneficials, aphids are likely to reach treatment levels in some fields.

Black cutworms pheromone traps. At a site in Douglas County, a first-of-season black cutworm moth was caught on March 25. Four additional moths were caught March 26-27, but no more had been trapped as of April 6. At a site in Jefferson County, a first-of-season black cutworm moth was caught on March 27. A second moth was caught April 3. None have been caught at a site in Riley County in northeast Kansas since the first moth was trapped on March 7.

K.O. Bell, Jr. Entomologist
Kansas Department of Agriculture
(April 8 Report)

Growing degree days predict winter wheat growth

Wheat development can be described in terms of the development of leaves, tillers and roots. This development under field conditions can be described using a unit called "cumulative growing degree days".

Cumulative growing degree days (GDD) are calculated for winter wheat from the average centigrade temperature of each day over a period of time. The GDD for winter wheat at several locations in Nebraska — based on March 1 and April 1 starting dates — are below.

Generally it takes about 100 GDD for each leaf on a cereal plant such as winter wheat to grow out. This period is called a phyllochron — literally "leaf-time". The actual number of GDD per leaf required by a crop is not exactly 100, but ranges from about 80 to 120. There is little difference in the phyllochrons for different wheat cultivars planted at the same time, but there is a tendency for spring wheats to have shorter phyllochrons than winter wheats.

By using GDD and historical data you can predict when a crop is expected to reach a given development stage. For instance, it will take approximately 500 GDD from when winter wheat breaks dormancy to when the plant begins to joint. Most wheat herbicides should not be applied after jointing or crop injury may occur. Monitor winter wheat development closely as it approaches 500 GDD if you expect to need weed control. Application timing for specific herbicides and herbicide combinations is discussed in more detail in the April 1 issue of *Crop Watch*, page 19.

Drew J. Lyon, Extension Dryland Cropping Systems Specialist, Panhandle Research and Extension Center, Scottsbluff

Growing degree day accumulations

as of April 11, 1994

	Celcius		Fahrenheit		
Accumulated	*Base 0*[1]		*Base 40*[2]		*Base 48*[3]
from	*3/1*	*4/1*	*3/1*	*4/1*	*1/1*
Ainsworth	259	78	312	97	219
Alliance West	262	77	321	94	221
Arthur	278	80	339	98	230
Beatrice	321	96	382	116	289
Central City	281	87	339	110	239
Clay Center	296	91	347	110	247
Concord	234	77	272	96	167
Curtis	306	87	382	109	289
Elgin	252	76	285	94	193
Gordon	233	75	273	90	160
Grant	295	83	367	104	261
Holdrege	318	89	389	110	284
Lincoln	327	99	386	120	286
McCook	334	91	420	117	336
Mead	291	89	348	111	247
North Platte	302	86	384	109	286
O'Neill	244	76	292	96	206
Ord	268	80	327	101	240
Red Cloud	328	96	395	117	295
Rising City	278	86	328	107	217
Scottsbluff	281	81	351	102	269
Shelton	297	91	356	111	255
Sidney	273	76	336	92	161
Tarnov	265	81	316	102	209
West Point	263	83	311	104	209

[1]*Recent research on winter wheat development uses the 0 (32° F) base.*
[2]*Base 40 has traditionally been used to track winter wheat development.*
[3]*Base 48 is used to track alfalfa weevil development.*

Soil temperature summary

Seven-day summary ending 4/10

	Fahrenheit				
	Ave	*Norm*	*Hi/Day*	*Lo/Day*	*Last Reading*
Ainsworth	47.0	50.9	51/5	42/2	49.1
Alliance	42.0	50.0	45/4	38/2	41.3
Arthur	44.4	49.9	49/5	40/2	45.8
Beatrice	47.1	54.9	50/1	44/3	48.0
Central City	43.8	54.1	47/7	40/2	47.0
Clay Center	43.9	54.1	48/5	40/2	45.7
Concord	40.1	51.9	45/7	35/2	45.0
Curtis	45.3	53.5	49/5	42/3	45.4
Elgin	43.8	51.8	47/7	40/2	47.2
Gordon	42.7	48.7	45/4	40/2	44.0
Grant	47.7	52.8	52/5	45/2	45.4
Holdrege	50.1	53.9	55/5	46/3	47.3
Lincoln	49.2	54.3	53/7	45/2	52.9
McCook	45.2	55.0	50/5	41/3	43.6
Mead	40.7	53.8	43/7	38/3	43.4
NorthPlatte	46.6	52.0	50/5	43/2	46.0
O'Neill	44.3	51.1	47/5	41/2	46.3
Ord	47.0	52.2	51/5	41/2	50.4
Red Cloud	55.0	55.0	60/1	51/3	54.6
Rising City	51.6	53.2	56/5	47/2	55.0
Scottsbluff	43.4	50.9	45/5	39/2	43.9
Shelton	45.9	53.6	48/1	43/3	47.3
Sidney	45.3	49.9	47/5	44/2	44.1
Tarnov	44.5	52.1	48/7	41/3	47.8
West Point	40.3	52.3	45/7	36/2	44.6

Weed control essential to successful no-till

Successful no-till crop production requires that weeds established prior to planting, and weeds that emerge later, be controlled. The following strategies will help you effectively control weeds under a no-till system.

The early preplant strategy

Early weed growth can be controlled successfully by applying an early preplant (EPP) herbicide. Apply it 10 to 15 days before planting corn. An EPP application, which includes both a grass and broadleaf herbicide, will normally provide season-long weed control. However, an additional treatment may be needed at planting if the initial application was 20 to 30 days ahead of planting, or if the soil is disturbed significantly during planting.

Ideally, an EPP herbicide is applied before weed seeds germinate. Most EPP treatments include a triazine herbicide, such as Atrazine, Bladex, Lexone or Sencor, which have some effect on emerged weeds. This effect can be increased by adding 2,4-D, crop oil concentrate, or 28% UAN solutions. If the weeds are taller than three or four inches, include Roundup or Gramoxone Super.

No-till planters equipped with certain coulters disturb the herbicide barrier in the row, which can result in "weed escapes." In this situation, apply either a pre-emergence or postemergence herbicide over the row.

Early preplant plus pre-emergence or postemergence strategy

Soybean and grain sorghum planting usually follow corn by 10 to 30 days. EPP treatments are usually 20 to 40 days before planting. A single application may not provide season-long control.

A split application, with one portion of the herbicide applied EPP and the other at planting time, helps maintain control. Another strategy is to apply an EPP treatment and follow up with a postemergence herbicide program. Not only are the operations spread out over an extended period, but you can choose the herbicide to match the weed problem.

The early preplant strategy has several advantages. Because weeds are not established, early season weed control is usually more consistent, soil moisture is conserved, and the expense of the burndown herbicide is eliminated. The main disadvantage is that EPP applications will fail if rainfall does not activate the herbicide treatment. Also, if planting is delayed because of excessive rainfall, the herbicide may break down, reducing weed control. For late planted crops, sequential herbicide treatments are usually needed to maintain season-long control.

The planting time strategy

A pre-emergence herbicide is applied in combination with a nonselective, foliar applied herbicide, such as Gramoxone Super or Roundup. The nonselective herbicide controls established weeds and the residual herbicides provide weed control for the rest of the season. With corn that is planted before weeds become well established, Gramoxone or Roundup are usually not required.

The advantage of planting time treatments is that a single herbicide application controls the weeds. The disadvantages are the added cost of the "burndown" herbicide, where needed, erratic weed control if the weeds are excessively tall, and depleted soil moisture early weed growth develops.

Burndown + postemergence strategy

Another approach using entirely postemergence herbicides involves a burndown treatment 0 to five days before planting followed by a postemergence treatment(s). There is a need for the burndown treatment prior to planting sorghum and soybeans. Weed growth prior to corn planting is often minimal.

John W. McNamara, Extension Assistant, and Alex R. Martin, Extension Weed Specialist

Be a skeptic with phone herbicide sales

Several companies are attempting to sell broadleaf-brush herbicides over the phone throughout the central part of Nebraska. It appears that the herbicide in question does not have a trade name or label information such as a list of the active ingredients contained within the product. In the past, compounds offered through similar promotions have contained primarily 90-95% petroleum distillates and 0.5% to 1.0% 2,4-D.

Do not be fooled. This is another attempt by little known companies to sell herbicides which lack in performance and are very expensive. Ask for a label of the product being sold. All active ingredients and application information will be listed on legitimate products. Companies with viable products will provide this information without reservation.

**John W. McNamara
Extension Assistant**

Treatment options for triazine-resistant kochia

Kochia and Russian thistle are summer annual weeds that germinate in early spring and are particularly troublesome in conservation tillage systems. Kochia and Russian thistle are normally readily controlled with Atrazine, Bladex, Lexone, and Sencor. However, in many areas of western and central Nebraska, kochia has developed resistance to triazine herbicides. Several control strategies can be used to control both susceptible and triazine-resistant kochia and Russian thistle.

In ridge-till or no-till corn, Banvel effectively controls Russian thistle and triazine resistant (TR) kochia. FallowMaster, Gramoxone Extra, and Landmaster BW are effective on emerged kochia when applied before planting. Fallow Master provides longer kochia control. Triazine-resistant kochia is more difficult to control with 2,4-D than Russian thistle.

For ridge-planted or no-till corn or sorghum, it's important to spray prior to planting while weeds are small. Apply Banvel at 1/2 pint per acre before, during or after planting corn on coarse, medium, and fine textured soils with less than 2% organic matter. Check with seed dealer for your hybrid's tolerance to Banvel. For sorghum, apply Banvel at 1/2 pint per acre 15 to 20 or more days before planting. In western Nebraska, use 20 days. Crop residue pushed aside during planting may protect weeds if sprayed after planting. Most problems with kochia in ridge-till occur when the planter openers do not cover kochia with soil at planting. Many ridge tillers set their planters to remove less ridge which reduces the effectiveness of weed control.

In fields where a seedbed is prepared for corn, use a tandem disk harrow or other tillage implement ahead of planting to kill emerged weeds. A mixture of Banvel at 1/2 to 3/4 pint per acre depending on soil texture and organic matter plus preemergence herbicides offers good kochia control in corn. Preemergence applications of Banvel at 3/4 or 1 pint per acre in corn can only be used on medium and fine textured soils with 2% or more organic matter.

A delayed planting can be used to your advantage, since additional kochia can emerge and be killed with tillage; however, planting too late will reduce yields.

Postemergence

A delayed planting can be used to your advantage, since additional kochia can emerge and be killed with tillage. However, corn yields may be reduced by planting later.

Several herbicides may be applied postemergence on corn and sorghum. The safest time to apply Banvel to corn is from the spike to five-leaf stage. In sorghum, apply Banvel when the sorghum is in the three- to five-leaf stage. In corn 8 to 36 inches tall use drop nozzles and direct spray solution to the lower half of the plant. Do not use Banvel within 1/2 mile of sugarbeets, field beans, alfalfa, soybeans, gardens, and ornamentals. Do not use Banvel from June 20 to Sept. 1.

Marksman at 2 pints per acre for kochia less than 2 inches tall or 3 pints per acre for kochia less than 4 inches tall has been effective. Use Buctril/atrazine at 2 pints per acre on kochia less than 2 inches tall and 3 pints per acre on kochia less than 4 inches tall. Banvel at 1/4 pint per acre added to the Buctril/atrazine mix will help control taller kochia.

Tough, sold by Ceder Chemical, is effective on triazine-resistant kochia at 1 quart per acre. At this rate the price is around $13/acre. Using Tough at 1 pint per acre plus atrazine has controlled small kochia less than 1 inch. Tough controls some broadleaf weeds while the atrazine controls most broadleaf weeds missed by Tough and provides some grass control. Buctril can be applied before planting up until corn or grain sorghum emergence to control actively growing weed seedlings. It also may be used postemergence on grain sorghum in the three-leaf stage to tassel emergence. Banvel plus Buctril probably gives the most consistent control.

Triazine-resistant kochia can be controlled in ridge planted or no-till soybeans with Roundup at 1 pint per acre plus Pursuit, Pursuit Plus, Command, Canopy, or Gemini prior to crop emergence. These treatments should be applied 7 to 30 days before planting depending upon the size of the kochia. Gramoxone Extra does not work with these herbicides. Command applied preemergence or preplant incorporated will control kochia in soybeans. Soil applied treatments effective against Russian thistle include Sonalan, Treflan, Sencor, Lexone, Scepter, Preview, and Pursuit.

Postemergence herbicides that are effective on triazine-resistant kochia on tilled ground include Pursuit, Classic, Classic + Pinnacle, and Basagran 1 GPA 28% UAN. Kochia must be sprayed when less than 2 inches tall. Herbicides should be applied within 30 days of planting.

Gail Wicks, Bob Klein and Alex Martin, Extension Weeds Specialists

EPUs provide for extension specialization

To many people, Extension Programming Units (EPUs) may be a new term, but for the past several years Extension offices across Nebraska have been working in multi-county programming units. EPUs are groups of counties, ranging in size from three to nine. Extension educators and assistants in these units work together to plan and coordinate educational programs and activities.

By working as EPU units, staff have an opportunity to take the lead or specailize in areas of interest or expertise. Most staff will try and answer or find answers to individual questions, however by taking the lead in a subject area, they can stay more abreast of current issues. Most Extension educators also are affiliated with a department on campus and attend training and help conduct research in the individual units.

The EPU contacts for crops, soil and range management and pest management are listed below. Most EPUs also have educators specializing in theses areas: livestock management; horticulture; conservation, natural resources and the environment; marketing, finance, and farm management; personal, family and business resource management; individual and family development; food nutrition and health; community and economic development; and 4-H and youth development.

Use this chart to locate the extension educator in your EPU who can best amswer your specific crop questions.

Gary Zoubek, Extension Educator, York, Blue River EPU

District	EPU unit	Crop, soil & range management contact	Pest management contact
Panhandle	North Panhandle	Jennifer Nixon	
	Central Panhandle	James Schild, Tom Holman	Jim Schild
	South Panhandle	Raymond Sall	Karen DeBoer
West Central	Custer/Dawson	Don Lydic, David Stenberg	Don Lydic, Bruce Treffer
	Prairie Lakes	Noel Mues, Delroy Hemsath	Bob Rathjen, Noel Mues
	High Plains Six	Larry Peterson, John Lambert	Larry Peterson
	Sandhills	Denny Bauer, Byron Stolzenburg, Jack Robinson	Byron Stolzenburg
	Southwest Four	Milton King, Ed Siffring	Ed Siffring
South Central	Central IV	Scott Brady, Doug Anderson	Doug Anderson
	Fort Kearny	Alan Corr, Ralph Anderson	Ralph Anderson, Gary Hall
	Grand Central Triad	Darrel Siekman	Tom Drudik, James Hruskoci
	South Central Six	Paul Swanson, Steve Melvin	Tom Dorn
Northeast	Eastern Niobrara	Terry Gompert, Ralph Kulm	Ralph Kulm
	Elkhorn Valey	Dewey Teel	Chris Carlson
	Northeast Five	Frank Morse	Michael Lechner
Southeast	East Central	Jim Peterson, Russ Lang, John Wilson	John Wilson
	Gage/Jefferson/Saline	Paul Hay, Randy Pryor	Paul Hay
	Metro	Ward Shires, Keith Glewen	Dennis Ferraro
	Midland IV	Duane Kantor	Frank Jasa
	Blue River	Gary Zoubek	Colleen Pallas
	Southeast Six	Ken Burgert, Jim Carson	Ken Burgert